



October 3, 2012

NRC 2012-0090  
10 CFR 50.73

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Point Beach Nuclear Plant, Unit 1  
Docket 50-266  
Renewed License No. DPR-24

Licensee Event Report 266/2012-004-00  
Unit 1 Manual Reactor Trip

Enclosed is Licensee Event Report (LER) 266/2012-004-00 for Point Beach Nuclear Plant, Unit 1. NextEra Energy Point Beach, LLC is providing this LER regarding the Unit 1 manual reactor trip.

This submittal contains no new or revised regulatory commitments.

If you have questions or require additional information, please contact Mr. Jim Costedio at 920/755-7427.

Very truly yours,

NextEra Energy Point Beach, LLC



Larry Meyer  
Site Vice President

Enclosure

cc: Administrator, Region III, USNRC  
Project Manager, Point Beach Nuclear Plant, USNRC  
Resident Inspector, Point Beach Nuclear Plant, USNRC  
PSCW

|   |        |  |  |  |   |  |  |                   |   |      |
|---|--------|--|--|--|---|--|--|-------------------|---|------|
| <b>NRC FORM 366</b><br>(10-2010)  |        | <b>U.S. NUCLEAR REGULATORY COMMISSION</b>  |  | APPROVED BY OMB: NO. 3150-0104             |   | EXPIRES: 10/31/2013                                  |  |                   |   |      |
| <b>LICENSEE EVENT REPORT (LER)</b>  |        |  |  |  |   |  |  |                   |   |      |
| <b>1. FACILITY NAME</b><br>Point Beach Nuclear Plant  |        |  |  | <b>2. DOCKET NUMBER</b><br>05000266        |   | <b>3. PAGE</b><br>1 of 3                             |  |                   |   |      |
| <b>4. TITLE</b><br>Unit 1 Manual Reactor Trip   |        |  |  |  |   |  |  |                   |   |      |
| <b>5. EVENT DATE</b>  |        |  | <b>6. LER NUMBER</b>   |  |   | <b>7. REPORT DATE</b>                                |  |                   |   |      |
| MONTH   | DAY    | YEAR                                       | YEAR   | SEQUENTIAL<br>NUMBER                       | REV.<br>NO.                                 | MONTH  | DAY  | YEAR              |   |      |
| 08  | 14     | 2012                                       | 2012   | - 004                                      | - 00  | 10   | 03   | 2012              |   |      |
| <b>8. OTHER FACILITIES INVOLVED</b>   |        |  |  |  |   |  |  |                   |   |      |
| FACILITY NAME   |        |  |  |  |   | DOCKET NUMBER  |  |                   |   |      |
| NA  |        |  |  |  |   | NA   |  |                   |   |      |
| FACILITY NAME   |        |  |  |  |   | DOCKET NUMBER  |  |                   |   |      |
| NA  |        |  |  |  |   | NA   |  |                   |   |      |
| <b>9. OPERATING MODE</b><br><br>1   |        |  | <b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§:</b> <i>(Check all that apply)</i> |  |   |  |  |                   |   |      |
| <b>10. POWER LEVEL</b><br><br>100%  |        |  | <input type="checkbox"/> 20.2201(b)  |  | <input type="checkbox"/> 20.2203(a)(3)(i)   |  | <input type="checkbox"/> 50.73(a)(2)(i)(C)             |                   | <input type="checkbox"/> 50.73(a)(2)(vii)     |      |
|   |        |  | <input type="checkbox"/> 20.2201(d)  |  | <input type="checkbox"/> 20.2203(a)(3)(ii)  |  | <input type="checkbox"/> 50.73(a)(2)(ii)(A)            |                   | <input type="checkbox"/> 50.73(a)(2)(viii)(A) |      |
|   |        |  | <input type="checkbox"/> 20.2203(a)(1)   |  | <input type="checkbox"/> 20.2203(a)(4)      |  | <input type="checkbox"/> 50.73(a)(2)(ii)(B)            |                   | <input type="checkbox"/> 50.73(a)(2)(viii)(B) |      |
|   |        |  | <input type="checkbox"/> 20.2203(a)(2)(i)  |  | <input type="checkbox"/> 50.36(c)(1)(i)(A)  |  | <input type="checkbox"/> 50.73(a)(2)(iii)              |                   | <input type="checkbox"/> 50.73(a)(2)(ix)(A)   |      |
|   |        |  | <input type="checkbox"/> 20.2203(a)(2)(ii)   |  | <input type="checkbox"/> 50.36(c)(1)(ii)(A) |  | <input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A) |                   | <input type="checkbox"/> 50.73(a)(2)(x)       |      |
|   |        |  | <input type="checkbox"/> 20.2203(a)(2)(iii)  |  | <input type="checkbox"/> 50.36(c)(2)        |  | <input type="checkbox"/> 50.73(a)(2)(v)(A)             |                   | <input type="checkbox"/> 73.71(a)(4)          |      |
|   |        |  | <input type="checkbox"/> 20.2203(a)(2)(iv)   |  | <input type="checkbox"/> 50.46(a)(3)(ii)    |  | <input type="checkbox"/> 50.73(a)(2)(v)(B)             |                   | <input type="checkbox"/> 73.71(a)(5)          |      |
|   |        |  | <input type="checkbox"/> 20.2203(a)(2)(v)  |  | <input type="checkbox"/> 50.73(a)(2)(i)(A)  |  | <input type="checkbox"/> 50.73(a)(2)(v)(C)             |                   | <input type="checkbox"/> OTHER                |      |
| <input type="checkbox"/> 20.2203(a)(2)(vi)  |        | <input type="checkbox"/> 50.73(a)(2)(i)(B) |  | <input type="checkbox"/> 50.73(a)(2)(v)(D) |   | Specify in Abstract below or in NRC Form 366A        |  |                   |   |      |
| <b>12. LICENSEE CONTACT FOR THIS LER</b>  |        |  |  |  |   |  |  |                   |   |      |
| NAME<br>Kim Locke - Engineering Analyst   |        |  |  |  |   | TELEPHONE NUMBER (Include Area Code)<br>920/755-7655 |  |                   |   |      |
| <b>13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT</b>  |        |  |  |  |   |  |  |                   |   |      |
| CAUSE   | SYSTEM | COMPONENT                                  | MANU-<br>FACTURER  | REPORTABLE<br>TO EPIX                      | CAUSE                                       | SYSTEM   | COMPONENT  | MANU-<br>FACTURER | REPORTABLE<br>TO EPIX                         |      |
| B   | JJ     | SC   | M455   | YES  |   |  |  |                   |   |      |
| <b>14. SUPPLEMENTAL REPORT EXPECTED</b>   |        |  |  |  |   | <b>15. EXPECTED SUBMISSION DATE</b>                  |  | MONTH             | DAY   | YEAR |
| <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE)  |        |  |  |  |   | <input checked="" type="checkbox"/> NO               |  |                   |   |      |
| <b>ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)</b>  |        |  |  |  |   |  |  |                   |   |      |
| <p>On August 14, 2012 at 2031, a Point Beach Nuclear Plant (PBNP) Unit 1 manual reactor trip was actuated due to indications of a loss of load to the main turbine.</p> <p>At approximately 2031 alarms were received in the control room indicating reduced PBNP Unit 1 turbine first stage pressure and generator megawatts, Indicative of a reduction in turbine load. Control rods were responding as designed by inserting into the reactor to reduce reactor power. Based on these indications, the Shift Manager directed that the reactor be shutdown by manually actuating the reactor protection system. No automatic reactor protection setpoints were exceeded and an automatic shutdown was not actuated or required.</p> <p>Based on troubleshooting, NextEra determined that the loss of turbine load was due to a failure of the main speed channel card in the electro-hydraulic (EH) system. The speed channel card was replaced.</p> <p>Pursuant to 10 CFR 50.73 (a)(2)(iv)(A), the event is reportable as an event or condition that resulted in manual actuation of the reactor protection system.</p> |        |  |  |  |   |  |  |                   |   |      |

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

| 1. FACILITY NAME          | 2. DOCKET | 6. LER NUMBER |                      |                    | 3. PAGE     |
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|                           |           | 2012          | - 004                | - 00               |             |

**NARRATIVE****Description of the Event**

On August 14, 2012, Point Beach Nuclear Plant (PBNP) Unit 1 was operating in a steady state condition at 100% power with no plant evolutions in progress. At approximately 2031 alarms were received in the control room indicating reduced PBNP Unit 1 turbine first stage pressure and generator megawatts, indicative of a reduction in turbine load. Control rods were responding as designed by inserting into the reactor to reduce reactor power. Based on these indications, the Shift Manager directed that the reactor be shutdown by manually actuating the reactor protection system. No automatic reactor protection setpoints were exceeded and an automatic shutdown was not actuated or required.

A failure investigation process (FIP) was entered. Based on troubleshooting, NextEra determined that the loss of turbine load was due to a failure of the main speed channel 'B' card in the electro-hydraulic EH [HCU] system.

Both 'A' and 'B' speed channel cards in the EH system were replaced with spares and calibrated. This was done as a conservative measure since only the 'B' card had failed. The calibration was completed satisfactory and the EH system was subsequently returned-to-service.

This event is not reported as a safety system functional failure.

**Analysis of the Event**

Turbine speed is controlled by the turbine EH system. The EH system has two independent speed sensing circuits, each comprised of a passive probe and two printed circuit cards.

The Main speed channel circuit is designed to regulate turbine speed. When the turbine is offline it inputs to the turbine speed controller, and is used for turbine roll up. When the turbine is connected to the grid, it is the input to the frequency correction circuitry.

The Auxiliary speed channel circuit is dedicated to overspeed protection. When an overspeed condition is sensed in excess of 103% of rated turbine speed, the Auxiliary Governor closes the governor valves and actuates other protective features.

In the Main speed channel circuit the speed channel 'B' card takes the pulse train from the speed channel 'A' card and converts it to an analog signal that is proportional to shaft speed. This signal is used as the supply to the speed controller circuit which is the circuit that drives the governor valves to maintain turbine speed.

The speed control circuit determines the speed error based on actual turbine speed versus demanded speed. This signal is then sent to the governor valve controller which uses it as an input to determine the governor valve control signal.

NextEra determined that the Main speed channel circuit channel 'B' card failed in a manner that caused the card to generate a high turbine speed signal. This caused the governor valve control circuit to close the governor valves, which caused the generator to shed load. These indications were the initiating event for the PBNP Unit 1 manual reactor trip.

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**NARRATIVE**

### Analysis of Safety Significance

A manual reactor trip was initiated in response to the turbine governor valves closing and the loss of generator load while the reactor was still at power. No automatic reactor protection setpoints were exceeded, and the automatic reactor protection system was not actuated nor needed. Plant systems functioned as required following the trip.

The reactivity effects during this particular event had no impact on the safety of the core. The initial event resulted in reactor coolant system (RCS) temperature rising as steam demand was reduced by the closing governor valves. At this stage in core life, the moderator temperature coefficient is largely negative (approximately -22 pcm/deg F); thus, the rising temperature added significant negative reactivity. The control rods began to insert into the core to control the temperature increase as designed. The Shift Manager and operating crew responded appropriately by manually actuating the reactor protection system to shut down the reactor.

### Corrective Actions

The 'A' and 'B' main speed cards were replaced with spares and calibrated.

### Similar Events

LER 2012-001-00, Unit 2 Manual Reactor Trip

### Failed Components

1C-039, Main Speed Channel B card, Motorola LM201AH Op Amp